



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,386	03/26/2004	Herbert Hartgrove	03-336	8629
62753	7590	10/01/2008	EXAMINER	
VALERIE CALLOWAY CHIEF INTELLECTUAL PROPERTY COUNSEL POLYMER GROUP, INC. 9335 HARRIS CORNERS PARKWAY SUITE 300 CHARLOTTE, NC 28269			STEELE, JENNIFER A	
ART UNIT	PAPER NUMBER		1794	
MAIL DATE	DELIVERY MODE			
10/01/2008	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/810,386	Applicant(s) HARTGROVE ET AL.
	Examiner JENNIFER STEELE	Art Unit 1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 11 June 2008.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-16 is/are pending in the application.

4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 5-16 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____

5) Notice of Informal Patent Application
 6) Other: _____

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. **Claim 5-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Mater et al (WO 2003023108 referenced as US 2004/0198125) in view of Kelly (US 2002/0004348) and Rearick et al (US 6,491,727).** Mater teaches nonwoven flame barrier fabrics (ABST). Mater teaches preferred fiber blends are designed to withstand extended periods of time exposed to flame (ABST). Mater teaches that optionally, natural fibers can be included to improve product economics (ABST). Mater teaches categories of fibers with respect to flame resistance and properties. Mater teaches category 1 fibers that are inherently fire resistant and resistant to shrinkage by a direct flame. Category 1 fibers include melamines, meta-aramids, para-aramids, polyamideimides, flame retardant viscose rayons (e.g. viscose rayon based fiber containing 30% aluminosilicate modified silica) [0023]. Category 2 fibers are made from

polymers with halogenated monomers and include modacrylics [0072]. Category 3 fibers include low melt binders. Category 4 fibers include the natural fibers such as cotton, wool, silk. Category 5 fibers include non-flame retardant fibers that are synthetic and Category 6 fibers are halogenated binder resins [0075-0086]. Mater teaches blends of fibers, preferably to combine category 1 and 2 (para amids and modacrylics) because of synergistic charring effect [0094]. As amended claims recite the limitation that the layer chars rather than melts, Mater is also teaching this property. Mater teaches that one layer can be designed to provide emphasis of category 1 fibers and another layer to provide emphasis of category 2 fibers. Mater teaches percentages of the categories of fibers, category 1: 10-85% more preferably 30-60%, category 2: 10-85%, more preferably 30-60%, category 3: 0-30%, more preferably 10-20%, category 4: 0-40%, more preferably 10-20%, category 5: 0-40%, more preferably 10-20%, category 6: 0-40%, more preferably 10-20% [0087-0092]. Mater teaches blending of flame retardant fibers overcome disadvantages of previous fibers for example, hydroentangled nonwoven spunlace flame barriers containing significant amounts of p-aramid fibers impart a yellow color [0014]. Mater teaches a layered quilting panel that has a 1st, 2nd, 3rd, 4th and 5th layer of various blends of flame retardant fibers in the examples [0122-0135]. Mater differs from the current application and does not teach a lyocell fiber however Mater teaches flame retardant modified viscose rayon and viscose rayon is a regenerated cellulose fiber and is equated with a lyocell fiber. It would have been obvious to one or ordinary skill in the art to substitute the flame retardant treated viscose rayon fiber of Mater, with a non flame retardant treated viscose rayon fiber such

Art Unit: 1794

as lyocell. It further would have been obvious to employ a lyocell fiber in the blend as Mater teaches blending flame retardant and nonflame retardant fibers in order to achieve both the properties of a soft feel and drape as well as the fire retardant protection. Mater differs from the current application and does not teach hydroentangling layers together.

Kelly teaches a hydroentangled nonwoven flame-retardant fabric consisting of a blend of melamine and aramid fibers. Kelly teaches a three dimensionally image transfer device for formation of the fabric (ABST). Kelly teaches this provides a fabric with air permeability and thermal protective properties. Kelly specifically teaches that while heat and flame resistant properties of aramid fibers are well known, fabrics produced using aramid fibers are heavy in weight and low in air permeability (col. 2, lines 54-64). Kelly teaches blending the aramid fibers with melamine fibers and use of three dimensional image transfer device to overcome the disadvantages of aramid fibers while still producing a flame retardant fabric.

Rearick teaches methods for reducing the flammability of cellulosic substrates (Title). Rearick teaches that cotton is a preferred cellulosic substrate for textiles and other cellulosic substrates include flax, jute, hemp, ramie, lyocell and regenerated unsubstituted wood celluloses such as rayon (col. 4, lines 61-63). Rearick teaches blends of cotton and other fibers such as modacrylics, rayons and lyocell.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ blends of fire resistant fibers with natural fibers and layers with differing blends as taught by Mater while substituting a lyocell fiber for a

viscose rayon motivated to produce a flame retardant fabric. Rearick further presents a finding that one of ordinary skill in the art could of substituted lyocell for cotton or a rayon fiber with a reasonable expectation of success. It further would have been obvious to employ the technique hydroentangling the fibers to produce a flame retardant fabric suitable for use bedding and mattress covers as taught by Kelly.

As to claims 13 and 14, Mater teaches high loft nonwoven layers that have basis weights in the range of 75 to 600 gsm which is equal to 2.2 oz/yd² to 17 oz/yd². Mater teaches the varying the basis weights and thickness of the highloft layers to achieve the desired fabric with required flame barrier effect [0114]. Mater teaches the embodiments wherein each of the layers is in the range of 75 to 600 gsm where one layer has a basis weight of 153 gsm and the other layer has a basis weight of 229 gsm. Therefore it would have been obvious to employ two layers, one with a basis weight of 2 oz/yd² and the other with a basis weight of 4 oz/yd².

As to claims 15 and 16, Mater teaches a preferred embodiment is a thermally bonded nonwoven highloft flame barrier for use in mattress, upholstered furniture, fiber-filled bed clothing and transportation seating applications is produced by making an intimate staple fiber blend from category 1 and 2 optionally adding fibers from all categories 3,4 and 5 [0022]. Mater teaches the fiber can be staple fiber and staple fiber blends. Further Kelly, teaches carded staple fiber blends of melamine and aramid fibers hydroentangled (col. 2, lines 63-67 and col. 3, lines 1-5). It would have been obvious to employ a staple length fiber motivated to produce a flame retardant nonwoven as taught by Mater and Kelly.

Response to Arguments

2. Applicant's arguments, with respect to the reference to Black qualifying as prior art under 102(e) wherein the reference was commonly owned by the Applicant at the time of invention, have been fully considered and are persuasive. The 35 USC 103(a) rejection of Mater in view of Black and Kelly of claims 5-14 has been withdrawn. New grounds of rejection are presented with respect to Mater in view of Kelly and Rearick. As a result this action is Non-Final.

3. Applicants argue that Black reference would have taught one of ordinary skill to design away from the present inventions where the lyocell is instead combined with a non-fusible fiber, modacrylic, which allows the lyocell to char instead of melt. As Mater is teaching blends of fibers that produce a charring effect to provide a flame barrier and do not melt or shrink away, Mater teaches this property. Mater teaches the synergistic blends provide this charring effect. However, further grounds of reference can be found in the art that shows that modacrylic also produces a charring effect. For example, US 4,996,009 to Cooke teaches that modacrylic fibers form a char to which closes pores of the woven fabric and prevents flame or hot gases from penetrating through.

4. Applicant argues that the present invention provides a solution to the yellowing problem of flame retardant fabric with para-amid fibers. Mater also teaches that the previous spunlaced fabrics of only para-amid fibers present a yellowing problem [0006]. Mater also teaches other flame retardant fabrics and their disadvantages. The fabric of Mater is presented to solve all of these disadvantages, and the fabric of Mater is a

teaching that blends of fibers and layers of fiber blends can achieve a flame retardant, yet aesthetically pleasing fabric desired by the consumer for bedding and mattresses.

5. Applicant argues that Mater in view of Kelly provides no teaching or success in hydroentangling separate discrete nonwoven fabric layers together. Kelly incorporates by reference US 4,750,443 which discloses three to seven nonwoven layers are hydraulically needled to one another and discloses US 4,748,065 which teaches a spunlaced fabric formed of NOMEX fibers that include laminates of spunlaced outer layers of NOMEX fibers. Kelly provides a teaching that multiple layers of flame retardant fibers can be hydroentangled and the results would have been predictable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER STEELE whose telephone number is (571)272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./
Examiner, Art Unit 1794

/Elizabeth M. Cole/
Primary Examiner, Art Unit 1794

9/19/2008